Delaware
Forest Health Highlights

April 1998

The Resource

From 1984 to 1992, Delaware's forested area decreased by 34,906 acres (from 380,684 to 345,778 acres), or an average of nearly 4,400 acres per year. This is a 9 percent reduction in the total forest land base in Delaware. Coniferous forests were reduced by 2,308 acres. An estimated loss of 77,482 acres of deciduous forests occurred within this 8-year period. However, 44,884 acres were reverted to a mixed stand of hardwoods/softwoods.

We suspect this trend continued from 1992 to 1997, but we will not know for sure until more recent satellite imagery data is analyzed. You may visit the following web site for more detailed information:

http://bluehen.aga.udel.edu/spatlab/lulc

Forest Stewardship

The Forest Stewardship Program remains active in Delaware, providing opportunities and incentives to nonindustrial private forest landowners. This program cost-shares up to $10,000 for approved land management projects and provides property tax relief benefits. As of 1997, there were 25,875 acres of Delaware forest land being managed under approved stewardship plans. Additionally, more than $186,000 in cost-share assistance has helped 84 forest landowners with various management objectives including wildlife habitat improvement, recreational enhancement, and timber production.

Special Issues

Gypsy Moth — In June of 1997, Delaware Department of Agriculture (DDA) Forest Service personnel conducted an aerial survey of gypsy moth defoliation over the entire state of Delaware. Defoliation levels of 30 percent or more were not detected on any surveyed forest land. Gypsy moth populations in Delaware are at their lowest level since 1980. The fungus, *Entomophaga maimaiga,* is probably responsible for this state- and region-wide population decline.

In the late summer and fall of 1996, 56,119 acres were surveyed for gypsy moth egg masses. Only 982 acres qualified (>250 egg masses per acre) for the 1997 suppression program. In late 1997, 45,055 acres were surveyed and 569 acres qualified for the 1998 suppression program.

Oak Decline — During a routine, statewide aerial survey for gypsy moth defoliation, numerous white oak snags could easily be seen from an altitude of 2,000 feet as whitish-grey silhouettes against a contrasting forest green background. As there is no one specific cause for this widespread mortality, it is best described as oak decline. Such a decline is not unique to Delaware; it has been detected around the world by scientists and foresters.

Stressful conditions initiating decline are triggered by living organisms (e.g. defoliating insects, fungal diseases), abiotic factors (e.g. frost, drought, air pollution), or natural processes involving the tree (e.g. low vigor caused by competition or advancing age). The process of decline is ongoing. An individual tree may exhibit symptoms of failing health for several years before death occurs. Severe drought in 1995 predisposed many trees to decline, but in 1996 (the third wettest year on record), stressful conditions were relieved.

Stress brought on by defoliation, drought, and ice storm damage has created a situation whereby many oaks in Delaware, especially white oaks, have started to decline. The two-lined chestnut borer, *Agrilus bilineatus*, only attacks trees that are under stress, and its

preferred hosts include oak trees. The shoestring fungus, *Armillaria mellea*, likewise attacks trees in a weakened state. These two organisms have been linked to oak decline in many regions in the United States. The only cure for decline is to relieve stressful conditions when possible. We expect more oaks to die in the coming years as a result of this decline.

Urban Forest Health Alert

The Asian long-horned beetle, *Anoplophora glabripennis*, recently devastated the urban forest in the Greenpoint section of Brooklyn, New York. The beetle attacks healthy trees, with the primary hosts being maples, horsechestnut, poplars, willows, and elms. The adult females lay their eggs by boring into branches and trunks in the late summer. Larvae emerge from eggs and bore into the green inner bark, feeding on the sap and continuing to bore into the heartwood. This exotic tree-killer has not been detected in the mid-Atlantic states to date, but if it spreads to Delaware, it will pose a serious threat to our urban and community forests.

Bark Beetle Survey

In 1997, a preliminary survey of bark beetles (*Coleoptera:Scolytidae*) uncovered 25 species that were not previously known to occur in Delaware. A more extensive survey is planned to further expand the list of species (native and exotic) found in Delaware. Such a list will serve as baseline information for future surveys and introductions of other exotic bark beetles.

Other Forest Health Concerns

Deer Damage — Although no hard data yet exists, it is evident that increasing deer populations are seriously damaging valuable oak stands in certain parts of the state. Extensive deer browsing on seedlings has the potential to dramatically reduce forest regeneration and sustainability.

Forest Fragmentation — Large scale construction projects, residential development, and conversion of forest land to crop land are fragmenting Delaware's forests. Such fragmentation often leads to a reduction in species diversity and may cause a decline in overall forest health.

Exotic Species —There is growing concern over the introduction and establishment of non-native species. If conditions are favorable, some introduced species rapidly spread, disrupting ecosystems, often causing irreparable harm to our native plant and animal communities. There are many well-known examples of insects and diseases that have caused extensive damage to our forest resource (e.g. gypsy moth and Dutch elm disease), but many invasive plants (e.g. mile-a-minute and Japanese honeysuckle) have the potential to cause extensive losses as well.

Best Management Practices

The DDA Forest Service recently developed a set of BMP's for forest management activities to reduce erosion and sedimentation of forest soils. BMP's minimize disturbances to the forest floor during harvesting and other forest management operations. These practices improve and maintain water quality in local streams, rivers, and bays and improve the condition of our forests.

For More Information

Delaware
Department of Agriculture
Forest Service

2320 South DuPont Highway
Dover, DE 19901
Phone: 302/739-4811
Web: http://www.state.de.us/deptagri/index.htm

USDA Forest Service
Northeastern Area
State and Private Forestry

Forest Health Protection
180 Canfield Street
Morgantown, WV 26505
Phone: 304/285-1541